

A TAXONOMIC STUDY OF THE ANT GENUS *Pachycondyla* FROM CHINA (Hymenoptera: Formicidae: Ponerinae)

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Abstract In this paper fifteen species of the ant genus *Pachycondyla* F. Smith from China were studied, with 2 new species described, 10 new combinations proposed, based on the modern concept of the genus, and 2 species first recorded in China.

Key words Hymenoptera, Formicidae, *Pachycondyla*, Taxonomy, China

Since the establishment of the genus *Pachycondyla* by F. Smith in 1858, many other close genera or subgenera were erected during 1858 to 1950. Hölldobler *et al.* (1990) listed 14 generic or subgeneric names and treated them as junior synonyms of *Pachycondyla*. The living species of the genus are distributed widely over the Palaearctic, Oriental, Australian, Ethiopian, Nearctic, and Neotropical regions. Brown (1950, 1957, 1963), Wilson (1958), Kempf (1960), and Yasumatsu (1962) revised part of the species of the genus respectively. But taxonomic problems of some species remain unsolved.

Wheeler (1930–1931) recorded 8 species, 1 subspecies, and 1 variety in China. Besides, 3 species were described in Taiwan and Tibet by Forel (1912), Wheeler (1929), and Menozzi (1941). Yasumatsu (1962) revised the Chinese species of *Ectomomyrmex* and *Pachycondyla*, *E. javanus maternus* Forel, *E. denticeps* Wheeler, *P. japonica* Emery, *P. horni* Forel, and *P. tonkina* Santschi are junior synonyms of *E. javanus* Mayr. Tang *et al.* (1982, 1985, 1987) reported 3 species in Tibet, Zhejiang and Yunnan. Terayama (1990) recorded 5 species in Taiwan, he also found the worker caste of *Trachymesopus darwini* (Forel), and considered that *Belonopelta darwini* var. *indica* Forel was a synonym of *T. darwini*. From 1990 to 1993, I made an investigation on the Chinese ants in Southwestern China, 9 species of the genus were collected,

This paper is dedicated to Professor Zheng Zhemin (Shaanxi Normal University, Xi'an), the famous Chinese orthopterologist, for the commemoration of his 40 years researching and teaching in Entomology.

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i. *e.amblyops*, *pilosior*, *annamita*, *leeuwenhoekii*, *javana*, *astuta*, *rufipes*, *lobocarena* sp.n., and *zhengi* sp.n., *amblyops* and *leeuwenhoekii* are new record species in China. To date, 15 species of *Pachycondyla* are known in China.

Standard measurements and indices used in this study are as defined in Brown (1975) and Hölldobler *et al.*(1990), all measurements are expressed in millimeters. The type-specimens are deposited in the Insect Collection, Department of Forest Protection, Southwest Forestry College, Kunming, Yunnan, China.

Pachycondyla F. Smith

Pachycondyla F.Smith, 1858: 105. Type-species: *Formica crassinoda* Latreille, 1802.

Bothroponera Mayr, 1862: 717.(Syn.Hölldobler & Wilson, 1990)

Ectomomyrmex Mayr, 1867: 83.(Syn.Hölldobler & Wilson, 1990)

Pseudoponera Emery, 1901: 42.(Syn.Hölldobler & Wilson, 1990)

Trachymesopus Emery, 1911: 84.(Syn.Hölldobler & Wilson, 1990)

1. *Pachycondyla amblyops* (Emery), new record

Emery, 1887: 434 (*Ponera*); Emery, 1901: 42.

2. *Pachycondyla sharpi* (Forel), comb.n.

Forel, 1901: 379 (*Euponera*); Brown, 1963: 7 (*Trachymesopus*).

3. *Pachycondyla pilosior* (Wheeler), comb.n.

Wheeler, 1928: 98 (*Euponera sharpi pilosior*); Brown, 1963: 8 (*Trachymesopus*).

4. *Pachycondyla schaefferi* (Menozzi), comb.n.

Menozzi, 1941: 12 [*Euponera* (*Trachymesopus*)].

5. *Pachycondyla darwini* (Forel)

Forel, 1893: 460 (*Belonopelta*); Emery, 1901: 46.

6. *Pachycondyla stigma* (Fabricius), comb. n.

Fabricius, 1804: 400 (*Formica*); Wilson, 1958: 355 (*Trachymesopus*).

7. *Pachycondyla annamita* (Andre), comb. n.

Andre, 1892: 48 (*Ponera*); Forel, 1900: 321-322 (*Ectomomyrmex*).

8. *Pachycondyla leeuwenhoekii* (Forel), comb. n., new record

Forel, 1886: 244 (*Ponera*); Forel, 1900: 321(*Ectomomyrmex*).

9. *Pachycondyla sauteri* (Forel), comb.n.

Forel, 1912: 49 (*Ectomomyrmex*).

10. *Pachycondyla javana* (Mayr), comb. n.

Mayr, 1867: 84 (*Ectomomyrmex*).

11. *Pachycondyla astuta* F.Smith

F. Smith, 1858: 107.

12. *Pachycondyla rufipes* (Jerdon), comb.n.

Jerdon, 1851: 119 (*Ponera*); Mayr, 1886: 359 (*Bothroponera*).

13. *Pachycondyla rubiginosa* (Emery), comb.n.

Emery, 1889: 498 (*Ponera*); Forel, 1900: 323 (*Bothroponera*).

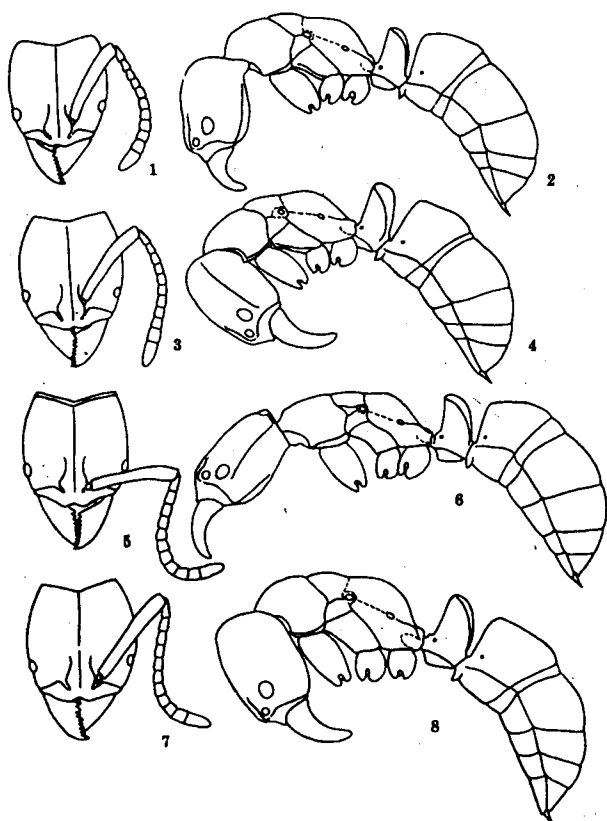
14. *Pachycondyla lobocarena* sp. n. (Figs.1-2)

Holotype worker: Measurement—TL 9.4, HL 2.15, HW 2.03, CI 94, SL 1.80, SI 89, PW 1.50, AL 3.00, ED 0.30, ML 1.25, PNL 0.63, PNW 1.10. Description—Head slightly longer than broad, lateral sides slightly convex, narrowing anteriorly; in full face view, occipital margin shallowly emarginate, occipital corners bluntly rounded; in profile view, occipital corner produced in a lobe-like process ventrally; mandibles long triangular, masticatory margin has 9 teeth; clypeus transverse, anterior margin extruding, concave in the middle; antenna has 12 segments, apex of scape extending backward just to the occipital corner, funiculi incrassate towards the apex; eyes moderate large; in profile view, dorsum of alitrunk at the same level, evenly convex; humeral corners of pronotum bluntly angled; promesonotal suture obvious, impressed; metanotal groove indistinct; mesepisternum impressed by a distinct oblique furrow; dorsum of propodeum straight, rounded into the declivity, about equal to the latter; declivity concave in the middle; petiolar node compressed anteroposteriorly, anterior face convex vertically in the middle, upper portion of posterior face bevelled off forwards; subpetiolar process low, cuneiform; anterior face of gaster truncate, constriction between the basal two segments distinct; mandibles very finely and longitudinally striate; head and alitrunk densely and longitudinally rugose, rugae on dorsum of head slightly diverging posteriorly from a medial line, rugae on pronotal dorsum concentric, rugae on declivity diverging dorsally; petiolar node with transverse rugae on anterior and posterior faces; gaster finely punctured, not smooth; dorsum of head and body with abundant erect or suberect hairs and dense subdecumbent pubescences; dorsa of antennal scapes and hind tibiae with sparse suberect hairs and dense subdecumbent pubescences; colour black, antennal flagella, mandibles, tibiae, tarsi, and apex of gaster dark reddish brown.

Paratype workers: Measurement—TL 9.3–10.4, HL 2.03–2.35, HW 1.88–2.23, CI 89–98, SL 1.70–1.90, SI 85–95, PW 1.40–1.60, AL 2.80–3.25, ED 0.25–0.33, ML 1.20–1.40, PNL 0.55–0.70, PNW 0.95–1.15 (7 measured). Description is the same as holotype.

Holotype worker, China: Dali City (100.1° E, 25.6° N), 2000 m, Yunnan Prov., 10.X.1991, No.A91–1005 (Xu Zhenghui). Paratypes: 8 workers, with same data as holotype; 8 workers, with same data as holotype, but Nos.A91–968, 993, 999, 1006.

P. lobocarena is close to *P. javana* (Mayr) (Figs.3–4), but the sp. n. with its occipital corner produced in a lobe-like process ventrally in profile view, in full face view occipital margin shallowly emarginate, lateral sides of head slightly convex.



Figs. 1-8. *Pachycondyla* workers
 1-2: *P. lobocarena* sp.n. 3-4: *P. javana*,
 5-6: *P. zhengi* sp.n. 7-8: *P. astuta*
 1, 3, 5, 7: Head in full face view
 2, 4, 6, 8: Body profile

15. *Pachycondyla zhengi* sp. n. (Figs. 5-6)

Holotype worker: Measurement—TL 12.8, HL 2.80, HW 2.60, CI 93, SL 2.40, SI 92, PW 1.80, AL 3.70, ED 0.40, ML 1.80, PNL 0.80, PNW 1.48. Description—Head slightly longer than broad, lateral sides evenly convex, narrowing forwards; in full face view, occipital margin angularly excised, occipital corners bluntly angled; dorsum of head raised up as a ridge along the occipital margin; in profile view, occipital corner extruding in a right angle; mandibles long triangular, masticatory margin has 10 teeth; clypeus transverse, anterior margin extruding, concave in the middle; antenna has 12 segments, apex of scape feebly extending backward beyond the occipital corner, funiculi incrassate toward

the apex; eyes moderate large; in profile view, dorsum of alitrunk at the same level; humeral corners of pronotum extruding in right angles; promesonotal suture distinct, metanotal groove indistinct; mesepisternum impressed by a distinct oblique furrow; dorsum of propodeum obviously shorter than declivity, and bluntly rounded into the latter; declivity flat, with sharp lateral margins; petiolar node compressed anteroposteriorly, anterior face convex vertically in the middle, upper portion of posterior face bevelled off forwards; subpetiolar process low, cuneiform, bluntly angled anteroventrally; anterior face of gaster truncate, constriction between the basal two segments distinct; mandibles finely longitudinally striate; head and alitrunk coarsely longitudinally rugose, rugae on dorsum of head strong, diverging posteriorly from a medial line, rugae on pronotal dorsum concentric; lower portion of mesepisternum with transverse rugae; declivity with longitudinal rugae; petiolar node with transverse rugae on anterior and posterior faces; gaster densely punctured, opaque; dorsum of head

and body with abundant erect or suberect hairs and dense subdecumbent pubescences; dorsa of antennal scapes and hind tibiae with rich erect long hairs and suberect short ones, pubescences dense and decumbent; colour black, mandibles, antennal flagella, legs, and gastric apex dark reddish brown.

Paratype workers: Measurement—TL 12.0–13.8, HL 2.65–3.15, HW 2.33–3.10, CI 88–98, SL 2.10–2.55, SI 81–94, PW 1.65–2.00, AL 3.55–4.40, ED 0.35–0.44, ML 1.65–1.95, PNL 0.65–0.80, PNW 1.30–1.55 (7 measured). Description is the same as holotype.

Holotype worker, China: Baoshan City (99.1° E, 25.1° N), 1800 m, Yunnan Prov., 11.X.1991, No.A91–1052 (Xu Zhenghui). Paratypes: 2 workers, with same data as holotype; 18 workers, with same data as holotype, but Nos.A91–1026, 1028, 1030, 1044, 1047, 1063.

P. zhengi is close to *P. astuta* F.Smith (Figs.7–8), but the sp.n.with dorsum of head raised up as a ridge along the occipital margin, lateral sides of head evenly convex, in profile view occipital corner extending in a right angle, pilosity on dorsum of antennal scape can be distinguished into erect long hairs and suberect short ones.

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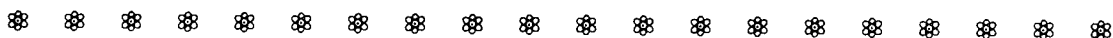
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摘要 本文记述中国厚结蚁属 *Pachycondyla* F. Smith 昆虫 15 种, 其中描述 2 新种: 片突厚结蚁 *P. lobocarena* 新种和郑氏厚结蚁 *P. zhengi* 新种。还报道 2 个中国新记录种, 并根据该属的现代概念对 10 个种作了重新组合。模式标本保存于云南昆明, 西南林学院森林保护系昆虫标本室。

关键词 膜翅目, 蚁科, 厚结蚁属, 分类, 中国



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